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SITE ASSESSMENT TECHNICAL ASSISTANCE

114286
EPA CONTRACT 68-S5-3

8 July 1996

Mr. Christopher Corbett (3HW22)
Remedial Project Manager
U.S. Environmental Protection Agency
841 Chestnut Building
Philadelphia, PA 19107

TDD No. 9605-44
DCN B0000368

Subject: Keystone Sanitation Landfill NPL Site - Trip Report

Dear Mr. Corbett:

Enclosed is the Keystone Sanitation Landfill NPL Site - Trip Report for your review. Please feel free to contact me at (215) 238-0338, Ext. 265 regarding any aspect of this report.

Very truly yours,

ROY F. WESTON, INC.

Colleen Duffy

Colleen Duffy
Site Leader

Attachments

cc: TDD File

SATA0300431CVRLTRMMy31

Roy F. Weston, Inc.

FEDERAL PROGRAMS DIVISION

In Association with Foster Wheeler Environmental Corporation; Resource Applications, Inc.; C.C. Johnson & Malhotra, P.C.; and PRC Environmental Management, Inc.

AR320214

TRIP REPORT

KEYSTONE SANITATION LANDFILL NPL SITE
HANOVER TOWNSHIP, ADAMS COUNTY, PA

TDD No. 9605-44
Contract No. 68-S5-3002

1.0 INTRODUCTION

On 30 May 1996, the Roy F. Weston, Inc. (WESTON_®), Site Assessment Technical Assistance (SATA) Team was directed by the U.S. Environmental Protection Agency (EPA) Remedial Project Manager (RPM) Christopher Corbett to conduct a residential groundwater sampling event at the Keystone Sanitation Landfill National Priorities List (NPL) Site (Site) located in Hanover Township, Adams County, Pennsylvania.

2.0 BACKGROUND

2.1 Site Description

The Site is an inactive landfill owned by the Keystone Sanitation Company and is located on Clouser Street, Hanover Township, Adams County, Pennsylvania (see Figure 1 Site Location Map). The landfill operated from 1966 to 1990 and was permitted by the Pennsylvania Department of Environmental Protection (PADEP) to receive household and municipal wastes, and certain types of industrial and construction debris. The landfill was constructed with no liner or leachate collection system. A treatment system was installed (SATA, 1995), during a Remedial Action.

The Keystone Sanitation Landfill Site was placed on NPL in July 1987. EPA issued a Record of Decision (ROD) on 30 September 1990 (SATA, 1995). The ROD established the Site remedial design that is to be completed in two phases, Operable Unit #1 (OU1) and Operable Unit #2 (OU2). OU1 included the capping of the old landfill area, and the installation of a water treatment system. Currently, OU1 is 60% complete. OU2 called for an off-site contaminant migration investigation of the groundwater.

Thirty-six residents are located within a one mile radius of the site. Approximately 700 residents are located within a 5-mile radius of the site. Groundwater sampling for thallium occurred in February and June of 1994, and in January and October 1995, by SATA (SATA, 1995).

Continuing OU2, the EPA Region III Alternative Remedial Contracts Strategy (ARCS) contractor, Halliburton NUS Corporation, sampled monitoring and residential wells in January and the fall of 1995. Lead concentrations were detected in three of the residential wells sampled.

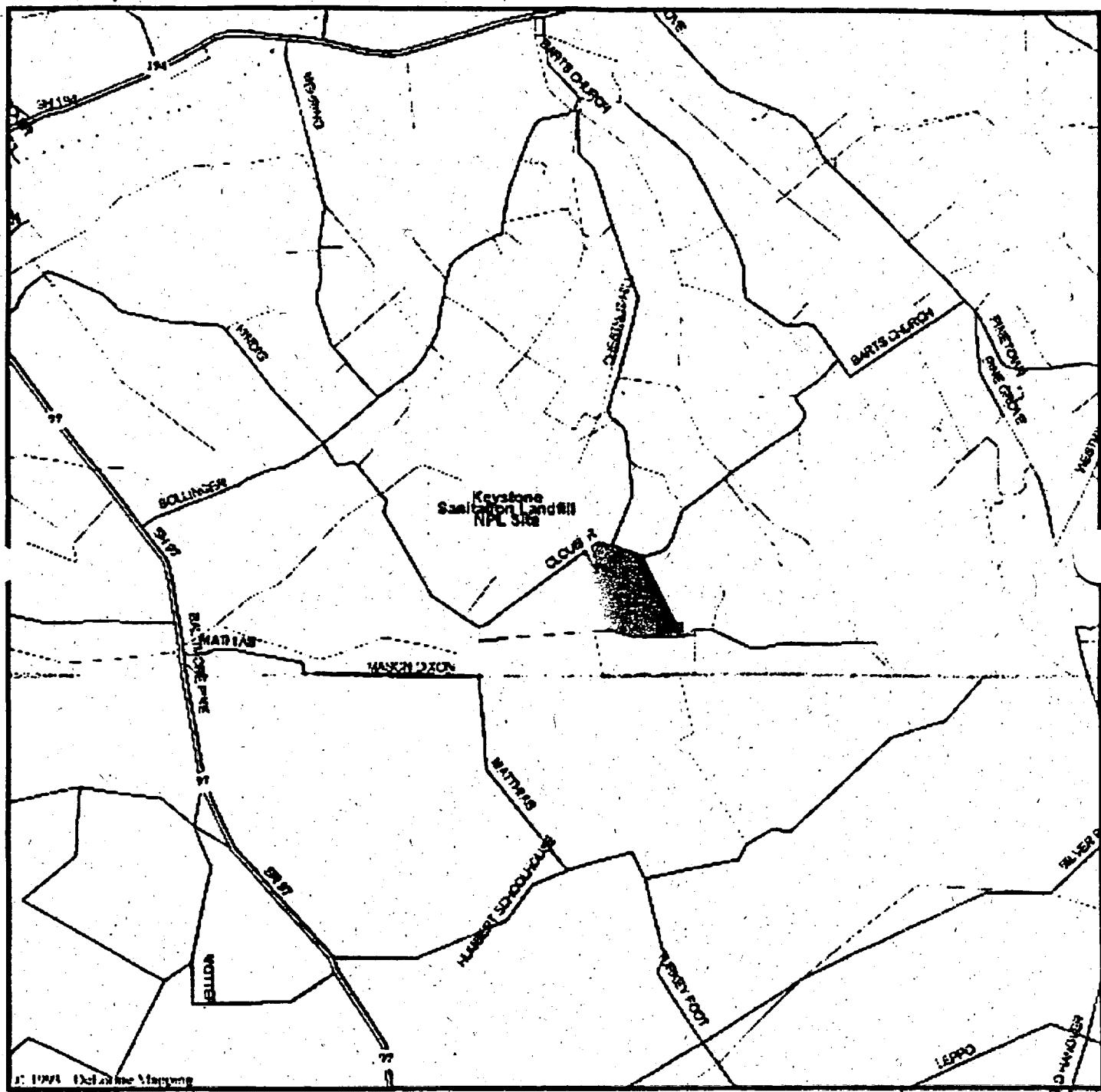
WESTON
MANAGERS DESIGNERS/CONSULTANTS

FEDERAL
PROGRAMS
DIVISION

Keystone Sanitation Landfill NPL Site
Hanover, Adams Co., PA

TDD #: 9605-44

PCS #: 2461



Scale 1:31,250 (at center)
2000 Feet

1000 Meters

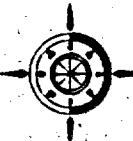


Figure 1: Site Location Map

AR320216

**KEYSTONE SANITATION LANDFILL NPL SITE
HANOVER TOWNSHIP, ADAMS COUNTY, PA.**

TDD No. 9605-44
Contract No. 68-S5-3002

3.0 SITE ACTIVITIES

On 31 May 1996, an EPA residential groundwater sampling activity, led by RPM Corbett, was initiated to collect groundwater samples to determine if home wells are contaminated with vinyl chloride or pentachlorophenol (PCP). Previous analytical results indicated that these contaminants were present in two home wells. SATA sampled these homes to determine if immediate actions were necessary.

3.1 Meteorological Conditions

The ambient meteorological conditions during the 31 May 1996 sampling activity are summarized below:

Table 1
Meteorological Conditions

Temperature	85 °F
Winds	5 mph
Conditions	sunny and clear
Humidity	50%

3.2 Sampling Activities

During the 31 May 1996 sampling event, SATA collected 13 samples. Nine samples were collected from homes and analyzed for volatile organic compounds (VOC), semi-VOCs, target analyte list (TAL) metals, and cyanide (see Figure 2 Sample Location Map). Two duplicates and a field blank were collected and analyzed for the same parameters. A trip blank was collected and analyzed for volatile organic compounds. All samples were handled and packaged in accordance with the sampling plan and were shipped via Federal Express to Chemtech Consulting Group in Englewood, New Jersey for analysis.

4.0 FUTURE ACTIONS/RECOMMENDATIONS

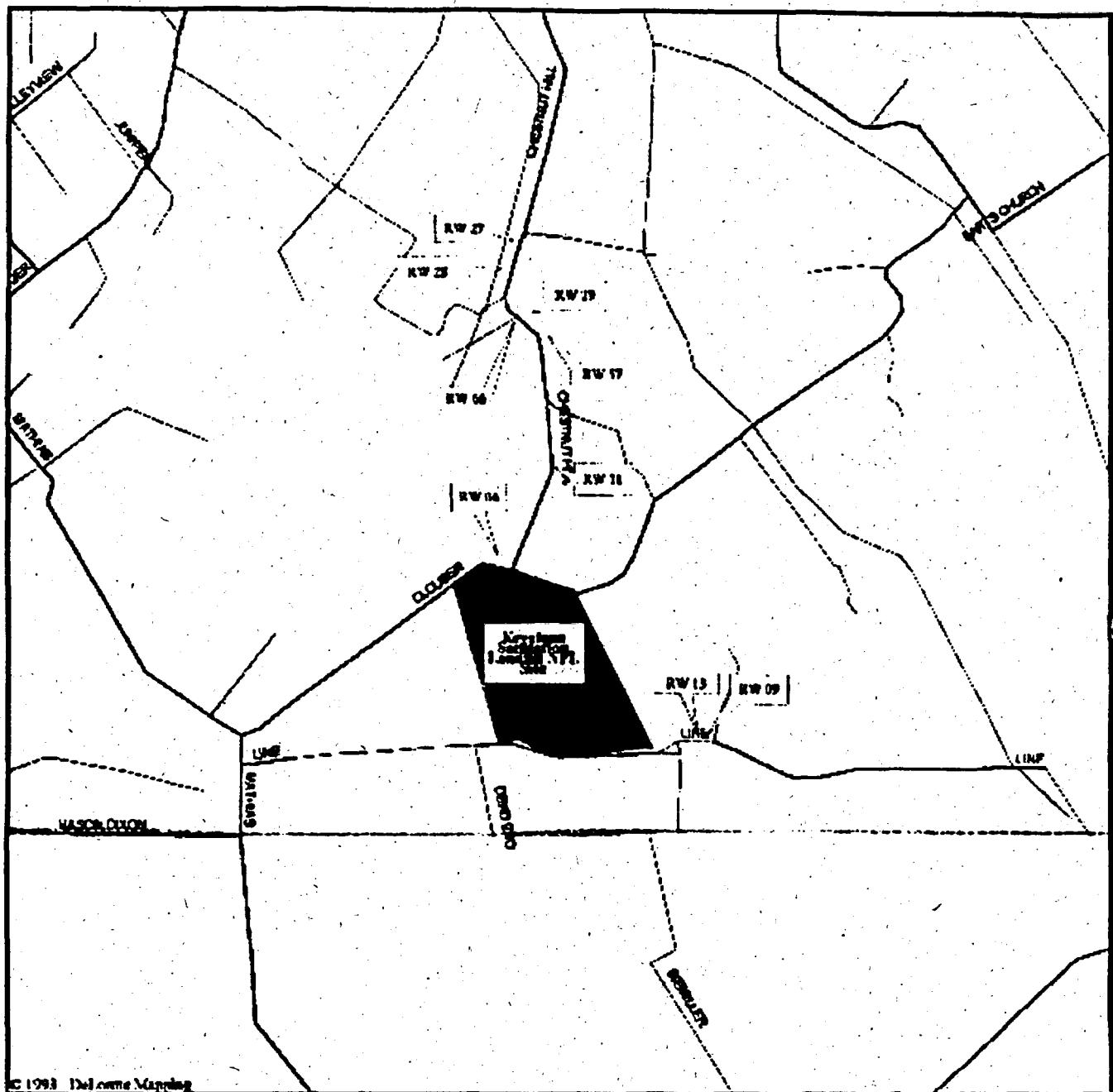
The analytical results are listed in Table 2, Selected Data Summary. The full analytical package has been forwarded to RPM Corbett along with the quality assurance/quality control review. Two homes had thallium detected at levels exceeding the corresponding MCL. One duplicate sample had levels of thallium above the MCL, but the sample of the home where the duplicate was taken did not have levels of thallium detected. Vinyl chloride and PCP were not detected at any of the locations. Future actions will be contingent on the associated results and the RPM's direction.



Keystone Sanitation Landfill NPL Site Hanover, Adams Co., PA

TDD #: 9605-44

PCS #: 2461



Scale 1: 15,625 (1st century)

1000 頁 -

100

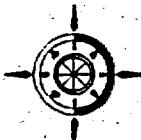


Figure 2: Sampling Location Map

AR320218

KEYSTONE SANITATION LANDFILL,NPL SITE
HANOVER TOWNSHIP, ADAMS COUNTY, PA

TDD No. 9605-44
Contract No. 68-S5-3002

Table 2
Selected Data Summary

Parameter	Detection Limit ($\mu\text{g/L}$)	MCL ($\mu\text{g/L}$)	Concentration ($\mu\text{g/L}$)	Sample Locations
Thallium	2 $\mu\text{g/L}$	2 $\mu\text{g/L}$	9.2 $\mu\text{g/L}$	RW 11
			3.3 $\mu\text{g/L}$	RW 400
			8.4 $\mu\text{g/L}$	RW 66
Arsenic	2 $\mu\text{g/L}$	50 $\mu\text{g/L}$	7.6 $\mu\text{g/L}$	RW 11
			7.0 $\mu\text{g/L}$	RW 13
			6.0 $\mu\text{g/L}$	RW 27
			4.3 $\mu\text{g/L}$	RW 28
			9.1 $\mu\text{g/L}$	RW 29
			3.5 $\mu\text{g/L}$	RW 300
			14.8 $\mu\text{g/L}$	RW 400
			7.6 $\mu\text{g/L}$	RW 57
			5.2 $\mu\text{g/L}$	RW 04
			7.8 $\mu\text{g/L}$	RW 09
Lead	2 $\mu\text{g/L}$	15 $\mu\text{g/L}$	8.8 $\mu\text{g/L}$	RW 11
			7.9 $\mu\text{g/L}$	RW 13
			2.0 $\mu\text{g/L}$	RW 27
			2.2 $\mu\text{g/L}$	RW 29
			7.2 $\mu\text{g/L}$	RW 300
			2.5 $\mu\text{g/L}$	RW 57
			3.4 $\mu\text{g/L}$	RW 66
			1 $\mu\text{g/L}$	U
			20 $\mu\text{g/L}$	U
			All Locations	
Vinyl Chloride	1 $\mu\text{g/L}$	2 $\mu\text{g/L}$	1 $\mu\text{g/L}$	U
PCP	20 $\mu\text{g/L}$	1 $\mu\text{g/L}$	20 $\mu\text{g/L}$	U
Methylene Chloride	2 $\mu\text{g/L}$		0.6 $\mu\text{g/L}$	J RW 13
			0.7 $\mu\text{g/L}$	J RW 300
			0.8 $\mu\text{g/L}$	J RW 11
			0.8 $\mu\text{g/L}$	J RW 57
			1.2 $\mu\text{g/L}$	J RW 28
			0.8 $\mu\text{g/L}$	J RW 400
			0.7 $\mu\text{g/L}$	J RW 29
			1.3 $\mu\text{g/L}$	J RW 27
			1.4 $\mu\text{g/L}$	J RW 04
			0.8 $\mu\text{g/L}$	J FB
			0.8 $\mu\text{g/L}$	J TB
			2 $\mu\text{g/L}$	B RW 57
			2 $\mu\text{g/L}$	B RW 400
Acetone	5 $\mu\text{g/L}$		1.8 $\mu\text{g/L}$	B RW 29
			1.8 $\mu\text{g/L}$	B RW 66
			1.9 $\mu\text{g/L}$	B RW 27
			1.9 $\mu\text{g/L}$	B RW 04
			4.7 $\mu\text{g/L}$	B FB
			5.2 $\mu\text{g/L}$	B TB
			0.6 $\mu\text{g/L}$	J RW 28
			0.6 $\mu\text{g/L}$	J RW 400
Unknown Hydrocarbon			3.1 $\mu\text{g/L}$	J RW 27
			2.2 $\mu\text{g/L}$	J TB
			0.8 $\mu\text{g/L}$	J RW 04
1,1-Dichloroethane	1 $\mu\text{g/L}$	75 $\mu\text{g/L}$	1.1 $\mu\text{g/L}$	RW 04
Dichlorodifluoromethane	1 $\mu\text{g/L}$			

**KEYSTONE SANITATION LANDFILL NPL SITE
HANOVER TOWNSHIP, ADAMS COUNTY, PA**

**TDD No. 9605-44
Contract No. 68-S5-3002**

TB	Trip Blank
FB	Field Blank
RW	Residential Well
J	Qualifier - Approximate
B	Qualifier - Blank Contamination
U	Qualifier - Undetected

5.0 REFERENCES

SATA, 1995. Sampling Plan from October 1995 Sampling Event, EPA Region III Site Assessment Technical Assistance Team, Delran, NJ.

Attachments: Data Quality Report

ATTACHMENT 1

AR320221

DATA QUALITY REPORT

KEYSTONE LANDFILL SITE
UNION TOWNSHIP, ADAMS CO., PA

TDD No. 9605-15
EPA CONTRACT No. 68-S5-3002

1.0 INTRODUCTION

This report provides a general review of the data package submitted by ChemTech Consulting Group, for 11 water samples, 1 field blank, and 1 trip blank collected at the Keystone Landfill Site in Union Township, Adams County, Pennsylvania, on 31 May 1996. The samples were received at ChemTech Consulting Group, in Englewood, New Jersey, on 1 June 1996. Target Compound List (TCL) organics (volatile and semivolatile only), Target Analyte List (TAL) metals and total cyanide analyses were requested.

2.0 ANALYTICAL METHODOLOGY

The samples were analyzed for TAL metals and total cyanide in accordance with the U.S. Environmental Protection Agency (EPA) Contract Laboratory Program (CLP) Statement of Work (SOW) ILC01.0. The TCL volatile and semivolatile organics were analyzed in accordance with CLP SOW OLC01.0

3.0 COMMENTS

3.1 Chain-of-Custody Records

Signed chain-of-custody records were received.

3.2 Volatile Organics (VOA)

The hold times were met. The gas chromatograph/mass spectrometer (GC/MS) tuning data met criteria. The initial calibration data met criteria. The continuing calibration data met criteria for all compounds, except the percent difference (%D) for acetone, 2-butanone, bromodichloromethane, 1,2-dichloroethane, cis-1,3-dichloropropene, 1,1,2-trichloroethane and tetracholorethene. None of these compounds were detected in any samples, except acetone, which was qualified due to blank contamination. The %D for 4-methyl-2-pentanone, and 2-hexanone on both 5 and 6 June 1996 were greater than 50%; therefore, qualify 4-methyl-2-pentanone, and 2-hexanone results for the samples as "UJ" or unreliable detection limit. Methylene chloride and acetone were detected in the method blank. The concentrations of methylene chloride and acetone detected in the samples were less than ten times the blank concentration; therefore, qualify the methylene chloride and acetone results for all samples as "B" or blank contamination. The internal standard and surrogate spike data met criteria for all samples. The matrix spike/matrix spike duplicate (MS/MSD) recoveries, and relative percent difference (RPD) values met criteria.

3.3 Semivolatile Organics (SVOA)

The hold times were met. The GC/MS tuning data, and internal standard data met criteria. The initial calibration met criteria for all compounds, except the relative response factor (RRF) for 4-nitroaniline which was less than 0.05. Qualify the results for 4-nitroaniline for all samples as "R" or unusable result. The continuing calibration did not meet the percent difference criteria of less than 25% for several compounds; however, since these compounds were not detected, no data was qualified. The response factor (RF) for 3-nitroaniline on 7 June 1996, 1739 hours did not meet criteria. Samples RW-13 and RW-4 were analyzed with this standard; therefore, qualify the results for 3-nitroaniline for Samples RW-13 and RW-4 as "R" or unusable result. The method blank was free of contamination for target compounds. The surrogate spike recoveries, MS/MSD recoveries, and RPD values met criteria.

3.4 TAL Metals and Total Cyanide

The hold times were met for all analyses. The initial and continuing calibration data met criteria for all analyses. No analytes were detected in the cyanide method blank. Aluminum, barium, calcium, cobalt, magnesium, sodium, and zinc were detected in the metals method blanks. Aluminum was detected in all samples at a concentration less than five times the blank concentration; therefore, qualify the aluminum results in all samples as "B" or blank contamination. The results for barium in Sample RW-11 and cobalt for Samples RW-09, RW-13, and RW-300 were less than five times the blank concentration. Qualify the barium results for Sample RW-11, and the cobalt results for Samples RW-09, RW-13, and RW-300 as "B" or blank contamination. The MS recoveries and RPD values met criteria. The contract required detection limit (CRDL) standard did not meet criteria for all analytes. All non-detect samples and samples less than two times the CRDL are affected by the standard. Qualify all results less than two times the CRDL for analytes which were below criteria for the CRDL standard as "L" or biased low. Qualify all non-detect results for samples whose analytes were below criteria for the CRDL as "UL" or biased low detection limit. The CRDL recoveries for antimony, arsenic and lead were both above and below criteria. Qualify all non-detect results for antimony, arsenic, and lead as "UJ" or approximate detection limit. Qualify all antimony, arsenic, and lead results less than two times the CRDL as "J" or approximate. The inductively coupled plasma (ICP) serial dilution for sodium did not meet criteria; therefore, qualify all sodium results as "J" or approximate, and all non-detect results for sodium as "UJ" or detection limit approximate. Table 1 found in Section 4.0 summarizes the metals data qualifiers. It should be noted that the "B" qualifier supersedes all other qualifiers, and the "J" qualifier supersedes the "L", and "UL" qualifiers.

4.0 SUMMARY

This data was reviewed in accordance with EPA Region III Modifications to the National Functional Guidance for Organic and Inorganic Data Review, September 1994. Listed below are the qualifiers applied during data validation.

- Qualify the methylene chloride and the acetone results for all samples as "B" or blank contamination.
- Qualify the 4-nitroaniline results for all samples, and the 3-nitroaniline results for Samples RW13 and RW-14 as "R" or unusable results.
- Qualify the 2-hexanone results and the 4-methyl-2-pentanone results for all samples as "UJ" or approximate detection limit.
- Qualify the aluminum results for all samples as "B" or blank contamination.
- Qualify the barium results for Sample RW-11, and the cobalt results for Samples RW-09, RW-13, and RW-300 as "B" or blank contamination.
- Listed below in Table 1 are the remaining qualifiers applied to the metals data.

Table 1
Metals Data Qualifiers Other Than Blank Contamination

Metals	Samples Qualified	Qualifier Applied
Antimony	FB, RW-04, RW-09, RW-27, RW-28, RW-400, RW-57	"UJ"
Antimony	RW-11, RW-13, RW-29, RW-300, RW-66	"J"
Arsenic	FB, RW-04, RW-09, RW-66	"UJ"
Arsenic	RW-300	"J"
Cadmium	FB, RW-04, RW-09, RW-11, RW-13, RW-27, RW-28, RW-29, RW-300, RW-400, RW-57, RW-66	"UL"
Chromium	FB, RW-09, RW-11, RW-28, RW-29, RW-300, RW-400, RW-57, RW-66	"UL"
Chromium	RW-04, RW-13, RW-27	"L"
Lead	RW-27, RW-29, RW-57, RW-66	"J"
Lead	FB, RW-28, RW-400	"UJ"
Potassium	FB	"UL"
Potassium	RW-04, RW-09, RW-11, RW-13, RW-27, RW-28, RW-29, RW-300, RW-400, RW-57, RW-66	"L"
Silver	FB, RW-04, RW-09, RW-11, RW-13, RW-27, RW-28, RW-29, RW-300, RW-400, RW-57, RW-66	"UL"
Sodium	FB	"UJ"
Sodium	RW-04, RW-09, RW-11, RW-13, RW-27, RW-28, RW-29, RW-300, RW-400, RW-57, RW-66	"J"
Thallium	RW-400	"L"
Thallium	FB, RW-04, RW-09, RW-13, RW-27, RW-28, RW-29, RW-300, RW-57,	"UL"



5 Underwood Court, Delran, New Jersey 08075-1229
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20 996

SITE ASSESSMENT TECHNICAL ASSISTANCE

EPA CONTRACT 68-S5-3002

11 June 1996

Mr. Christopher Corbett (3HW22)
Remedial Project Manager
U.S. Environmental Protection Agency
841 Chestnut Building
Philadelphia, PA 19107.

TDD No. 9605-44

Subject: Keystone Landfill NPL Site

Dear Mr. Corbett:

Enclosed is the Keystone Landfill NPL Site - Preliminary Data for your review. I received the enclosed data from the lab as part of their preliminary data package that they originally faxed to me on 10 June 1996. They made corrections for thallium on this data which includes only the TAL metals and cyanide results. Please feel free to contact me at (215) 238-0338, Ext: 265 if you have any questions or problems.

Very truly yours,

ROY F. WESTON, INC.

Colleen Duffy
Colleen Duffy
Site Lead

Attachments

Roy F. Weston, Inc.

FEDERAL PROGRAMS DIVISION

In Association with Foster Wheeler Environmental Corporation; Resource Applications, Inc.; C.C. Johnson & Malhotra, P.C.; and
PRC Environmental Management, Inc.

AR320225

U.S. EPA - CLP

LOW CONCENTRATION INORGANICS
ANALYSIS DATA SHEET

EPA SAMPLE NO.

FB

Lab Name: CHEMTECH CONSULTING GROUP Contract:

Lab Code: CHEM Case No.: SAS No.: SDG No.: RW-09

Matrix (soil/water): WATER Lab Sample ID: 5979S

Level (low/med): LOW Date Received: 06/01/96

Concentration Units: ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	16.1	B		P
7440-36-0	Antimony	4.0	U		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	1.0	U		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	16.0	U		P
7440-47-3	Chromium	1.0	U	*	P
7440-48-4	Cobalt	1.0	U	*	P
7440-50-8	Copper	5.0	U		P
7439-89-6	Iron	25.0	U		P
7439-92-1	Lead	2.0	U		P
7439-95-4	Magnesium	6.0	U		P
7439-96-5	Manganese	1.0	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	1.0	U		P
7440-09-7	Potassium	29.0	U		P
7782-49-2	Selenium	3.0	U		P
7440-22-4	Silver	2.0	U		P
7440-23-5	Sodium	23.0	U	E	P
7440-28-0	Thallium	2.0	U		P
7440-62-2	Vanadium	1.0	U		P
7440-66-6	Zinc	4.0	U		P
	Cyanide	8.0	U		CA

Color
Before: COLORLESS
After: COLORLESS

Clarity
CLEAR
CLEAR.

Viscosity

Comments:

U.S. EPA - CLP
 LOW CONCENTRATION INORGANICS
 ANALYSIS DATA SHEET

EPA SAMPLE NO.

RW-04

Lab Name: CHEMTECH CONSULTING GROUP Contract:

Lab Code: CHEM Case No.: SAS No.:

SDG No.: RW-09

Matrix (soil/water): WATER

Lab Sample ID: 5978S

Level (low/med): LOW

Date Received: 06/01/96

Concentration Units: ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	83.5	B		P
7440-36-0	Antimony	4.0	U		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	88.7			P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	16300			P
7440-47-3	Chromium	1.4	B	*	P
7440-48-4	Cobalt	1.0	U	*	P
7440-50-8	Copper	185			P
7439-89-6	Iron	116			P
7439-92-1	Lead	5.2			P
7439-95-4	Magnesium	9110			P
7439-96-5	Manganese	12.3			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	7.0	B		P
7440-09-7	Potassium	1080			P
7782-49-2	Selenium	3.0	U		P
7440-22-4	Silver	2.0	U		P
7440-23-5	Sodium	21400	E		P
7440-28-0	Thallium	2.0	U		P
7440-62-2	Vanadium	1.0	U		P
7440-66-6	Zinc	445			P
	Cyanide	8.0	U		CA

Color
 Before: COLORLESS
 After: COLORLESS

Clarity
 CLEAR
 CLEAR

Viscosity

Comments:

U.S. EPA - CLP
 LOW CONCENTRATION INORGANICS
 ANALYSIS DATA SHEET

EPA SAMPLE NO.

RW-09

Lab Name: CHEMTECH CONSULTING GROUP Contract:

Lab Code: CHEM Case No.: SAS No.: SDG No.: RW-09

Matrix (soil/water): WATER Lab Sample ID: 59663

Level (low/med): LOW Date Received: 06/01/96

Concentration Units: ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	50.2	B		P
7440-36-0	Antimony	4.0	U		P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	45.0			P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	4550			P
7440-47-3	Chromium	1.0	U	*	P
7440-48-4	Cobalt	4.3	B	*	P
7440-50-8	Copper	112			P
7439-89-6	Iron	136			P
7439-92-1	Lead	7.8			P
7439-95-4	Magnesium	3730			P
7439-96-5	Manganese	17.9			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.0	B		P
7440-09-7	Potassium	527	B		P
7782-49-2	Selenium	3.0	U		P
7440-22-4	Silver	2.0	U		P
7440-23-5	Sodium	5140	E		P
7440-28-0	Thallium	2.0	U		P
7440-62-2	Vanadium	1.0	U		P
7440-66-6	Zinc	107			P
	Cyanide	8.0	U		CA

Color
 Before: COLORLESS
 After: COLORLESS

Clarity
 CLEAR
 CLEAR

Viscosity

Comments:

U.S. EPA - CLP

LOW CONCENTRATION INORGANICS

EPA SAMPLE NO.

RW-11

Lab Name: CHEMTECH CONSULTING GROUP Contract:

Lab Code: CHEM Case No.: SAS No.: SDG No.: RW-09

Matrix (soil/water): WATER Lab Sample ID: 5971S

Level (low/med) : **LOW** **Date Received:** **06/01/96**

Concentration Units: ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	39.6	B		P
7440-36-0	Antimony	4.7	B		P
7440-38-2	Arsenic	7.6			P
7440-39-3	Barium	6.6	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	5070			P
7440-47-3	Chromium	1.0	U	*	P
7440-48-4	Cobalt	1.0	U	*	P
7440-50-8	Copper	404			P
7439-89-6	Iron	62.2	B		P
7439-92-1	Lead	8.8			P
7439-95-4	Magnesium	4430			P
7439-96-5	Manganese	4.9	B		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	3.2	B		P
7440-09-7	Potassium	371	B		P
7782-49-2	Selenium	3.0	U		P
7440-22-4	Silver	2.0	U		P
7440-23-5	Sodium	5380	E		P
7440-28-0	Thallium	9.2			P
7440-62-2	Vanadium	1.0	U		P
7440-66-6	Zinc	60.1			P
	Cyanide	8.0	U		CA

Color

Before: COLORLESS
After: COLORLESS

Clarity

CLEAR

Viscosity

Comments:

FORM I AD - LCIN

ILC01.0

AR320229

U.S. EPA - CLP
 LOW CONCENTRATION INORGANICS
 ANALYSIS DATA SHEET

EPA SAMPLE NO.

RW-13

Lab Name: CHEMTECH CONSULTING GROUP Contract:

Lab Code: CHEM Case No.: SAS No.:

SDG No.: RW-09

Matrix (soil/water): WATER

Lab Sample ID: 59698

Level (low/med): LOW

Date Received: 06/01/96

Concentration Units: ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	43.8	B		P
7440-36-0	Antimony	4.8	B		P
7440-38-2	Arsenic	7.0			P
7440-39-3	Barium	32.3			P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	4120			P
7440-47-3	Chromium	1.3	B *		P
7440-48-4	Cobalt	1.7	B *		P
7440-50-8	Copper	273			P
7439-89-6	Iron	37.2	B		P
7439-92-1	Lead	7.9			P
7439-95-4	Magnesium	2360			P
7439-96-5	Manganese	4.4	B		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	3.6	B		P
7440-09-7	Potassium	807			P
7782-49-2	Selenium	3.0	U		P
7440-22-4	Silver	2.0	U		P
7440-23-5	Sodium	3420	E		P
7440-28-0	Thallium	2.0	U		P
7440-62-2	Vanadium	1.0	U		P
7440-66-6	Zinc	59.9			P
	Cyanide	8.0	U		CA

Color
 Before: COLORLESS
 After: COLORLESS

Clarity
 CLEAR
 CLEAR

Viscosity

Comments:

U.S. EPA - CLP

LOW CONCENTRATION INORGANICS

ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: CHEMTECH CONSULTING GROUP

Contract:

Lab Code: CHEM

Case No.:

SAS No.:

RW-27

Matrix (soil/water): WATER

Level (low/med): LOW

SDG No.: RW-09

Lab Sample ID: 5977S

Date Received: 06/01/96

Concentration Units: ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	50.9	E		P
7440-36-0	Antimony	4.0	U		P
7440-38-2	Arsenic	6.0			P
7440-39-3	Barium	68.1			P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	1.0	U		P
7440-47-3	Chromium	28900			P
7440-48-4	Cobalt	1.4	B	*	P
7440-50-8	Copper	1.0	U	*	P
7439-89-6	Iron	74.1			P
7439-92-1	Lead	102			P
7439-95-4	Magnesium	2.0			P
7439-96-5	Manganese	7570			P
7439-97-6	Mercury	3.5	B		P
7440-02-0	Nickel	0.20	U		P
7440-09-7	Potassium	1.8	B		CV
7782-49-2	Selenium	766			P
7440-22-4	Silver	3.0	U		P
7440-23-5	Sodium	2.0	U		P
7440-28-0	Thallium	8330	E		P
7440-62-2	Vanadium	2.0	U		P
7440-66-6	Zinc	1.0	U		P
	Cyanide	39.7			P
		8.0	U		CA

Color
Before: COLORLESS
After: COLORLESSClarity
CLEAR
CLEAR

Viscosity

Comments:

FORM I AF - LCIN

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U.S. EPA - CLP

LOW CONCENTRATION INORGANICS

ANALYSIS DATA SHEET

EPA SAMPLE NO.

RW-28

Lab Name: CHEMTECH CONSULTING GROUP Contract:

Lab Code: CHEM Case No.: SAS No.: SDG No.: RW-09

Matrix (soil/water): WATER Lab Sample ID: S973S

Level (low/med) : LOW Date Received: 06/01/96

Concentration Units: ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.8	B		P
7440-36-0	Antimony	4.0	U		P
7440-38-2	Arsenic	4.3			P
7440-39-3	Barium	121			P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	36600			P
7440-47-3	Chromium	1.0	U	*	P
7440-48-4	Cobalt	1.0	U	*	P
7440-50-8	Copper	66.7			P
7439-89-6	Iron	33.9	B		P
7439-92-1	Lead	2.0	U		P
7439-95-4	Magnesium	7670			P
7439-96-5	Manganese	12.2			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	1.0	U		P
7440-09-7	Potassium	1200			P
7782-49-2	Selenium	3.0	U		P
7440-22-4	Silver	2.0	U		P
7440-23-5	Sodium	16500	E		P
7440-28-0	Thallium	2.0	U		P
7440-62-2	Vanadium	1.0	U		P
7440-66-6	Zinc	39.6			CA
	Cyanide	8.0	U		

Color

Clarity
CLEAR
CLEAR

Viscosity

Comments:

U.S. EPA - CLP

LOW CONCENTRATION INORGANICS
ANALYSIS DATA SHEET

EPA SAMPLE NO.

RW-29

Lab Name: CHEMTECH CONSULTING GROUP Contract:

Lab Code: CHEM Case No.: SAS No.: SDG No.: RW-09

Matrix (soil/water): WATER Lab Sample ID: 5975S

Level (low/med): LOW Date Received: 06/01/96

Concentration Units: ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	41.8	B		P
7440-36-0	Antimony	4.8	B		P
7440-38-2	Arsenic	9.1			P
7440-39-3	Barium	177			P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	40200			P
7440-47-3	Chromium	1.0	U	*	P
7440-48-4	Cobalt	1.0	U	*	P
7440-50-8	Copper	21.9			P
7439-89-6	Iron	25.0	U		P
7439-92-1	Lead	2.2			P
7439-95-4	Magnesium	9730			P
7439-96-5	Manganese	1.0	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	1.0	U		P
7440-09-7	Potassium	478	B		P
7782-49-2	Selenium	3.0	U		P
7440-22-4	Silver	2.0	U		P
7440-23-5	Sodium	10500		E	P
7440-28-0	Thallium	2.0	U		P
7440-62-2	Vanadium	1.0	U		P
7440-66-6	Zinc	30.3	U		P
	Cyanide	8.0	U		CA

Color
Before: COLORLESS
After: COLORLESS

Clarity
CLEAR
CLEAR

Viscosity

Comments:

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ILC01.0

AR320233

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 LOW CONCENTRATION INORGANICS
 ANALYSIS DATA SHEET

EPA SAMPLE NO.

RW-300

Lab Name: CHEMTECH CONSULTING GROUP Contract:

Lab Code: CHEM Case No.: SAS No.: SDG No.: RW-09

Matrix (soil/water): WATER Lab Sample ID: 5970S

Level (low/med): LOW Data Received: 06/01/96

Concentration Units: ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	43.5	B		P
7440-36-0	Antimony	5.3			P
7440-38-2	Arsenic	3.5			P
7440-39-3	Barium	30.6			P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	3920			P
7440-47-3	Chromium	1.0	U	*	P
7440-48-4	Cobalt	1.6	B	*	P
7440-50-8	Copper	250			P
7439-89-6	Iron	38.1	B		P
7439-92-1	Lead	7.2			P
7439-95-4	Magnesium	2260			P
7439-96-5	Manganese	5.1	B		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	4.1	B		P
7440-09-7	Potassium	781			P
7782-49-2	Selenium	3.0	U		P
7440-22-4	Silver	2.0	U		P
7440-23-5	Sodium	3170	E		P
7440-28-0	Thallium	2.0	U		P
7440-62-2	Vanadium	1.0	U		P
7440-66-6	Zinc	42.2			P
	Cyanide	8.0	U		CA

Color
 Before: COLORLESS
 After: COLORLESS

Clarity
 CLEAR
 CLEAR

Viscosity

Comments:

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U.S. EPA - CLP
LOW CONCENTRATION INORGANICS
ANALYSIS DATA SHEET

EPA SAMPLE NO.

RW-400

Lab Name: CHEMTECH CONSULTING GROUP Contract:

Lab Code: CHEM Case No.: SAS No.: SDG No.: RW-09

Matrix (soil/water): WATER

Lab Sample ID: 5974S

Level (low/med): LOW

Date Received: 06/01/96

Concentration Units: ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	41.5	E		P
7440-36-0	Antimony	4.0	U		P
7440-38-2	Arsenic	14.8			P
7440-39-3	Barium	117			P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	35700			P
7440-47-3	Chromium	1.0	U	*	P
7440-48-4	Cobalt	1.0	U	*	P
7440-50-8	Copper	57.2			P
7439-89-6	Iron	27.0	B		P
7439-92-1	Lead	2.0	U		P
7439-95-4	Magnesium	7460			P
7439-96-5	Manganese	11.9			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	1.0	U		P
7440-09-7	Potassium	1150			P
7782-49-2	Selenium	3.0	U		P
7440-22-4	Silver	2.0	U		P
7440-23-5	Sodium	16100		E	P
7440-28-0	Thallium	3.3			P
7440-62-2	Vanadium	1.0	U		P
7440-66-6	Zinc	33.6			P
	Cyanide	8.0	U		CA

Color
Before: COLORLESS
After: COLORLESS

Clarity
CLEAR
CLEAR

Viscosity

Comments:

U.S. EPA - CLF
 LOW CONCENTRATION INORGANICS
 ANALYSIS DATA SHEET

EPA SAMPLE NO.

RW-57

Lab Name: CHEMTECH CONSULTING GROUP Contract:

Lab Code: CHEM Case No.: SAS No.: SDG No.: RW-09

Matrix (soil/water): WATER Lab Sample ID: 5972S

Level (low/med): LOW Date Received: 06/01/96

Concentration Units: ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	38.3	B		P
7440-36-0	Antimony	4.0	U		P
7440-38-2	Arsenic	7.6			P
7440-39-3	Barium	35.4			P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	11100			P
7440-47-3	Chromium	1.0	U	*	P
7440-48-4	Cobalt	1.0	U	*	P
7440-50-8	Copper	44.8			P
7439-89-6	Iron	43.9	B		P
7439-92-1	Lead	2.5			P
7439-95-4	Magnesium	3480			P
7439-96-5	Manganese	116			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	2.4	B		P
7440-09-7	Potassium	634	B		P
7782-49-2	Selenium	3.0	U		P
7440-22-4	Silver	2.0	U		P
7440-23-5	Sodium	6560	B		P
7440-28-0	Thallium	2.0	U		P
7440-62-2	Vanadium	1.0	U		P
7440-66-6	Zinc	58.0			P
	Cyanide	8.0	U		CA

Color
 Before: COLORLESS
 After: COLORLESS

Clarity
 CLEAR
 CLEAR

Viscosity

Comments:

U.S. EPA - CLP
LOW CONCENTRATION INORGANICS
ANALYSIS DATA SHEET

NOV 1996

EPA SAMPLE NO.

RW-66

Lab Name: CHEMTECH CONSULTING GROUP Contract:

Lab Code: CHEM

Case No.:

SAS No.:

SDG No.: RW-09

Matrix (soil/water): WATER

Lab Sample ID: 5976S

Level (low/med): LOW

Date Received: 06/01/96

Concentration Units: ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	35.1	B		P
7440-36-0	Antimony	6.5			P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	293			P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	35600			P
7440-47-3	Chromium	1.0	U	*	P
7440-48-4	Cobalt	1.0	U	*	P
7440-50-8	Copper	26.4			P
7439-89-6	Iron	25.0	U		P
7439-92-1	Lead	3.4			P
7439-95-4	Magnesium	4980			P
7439-96-5	Manganese	10.3			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	1.0	U		P
7440-09-7	Potassium	537	B		P
7782-49-2	Selenium	3.0	U		P
7440-22-4	Silver	2.0	U		P
7440-23-5	Sodium	20700	E		P
7440-26-0	Thallium	8.4			P
7440-62-2	Vanadium	1.0	U		P
7440-66-6	Zinc	38.5			P
	Cyanide	8.0	U		CA

Color
Before: COLORLESS
After: COLORLESS

Clarity
CLEAR
CLEAR

Viscosity

Comments:

FORM I AL - LCIN

ILC01.0

AR320237

ENVIRONMENTAL PROTECTION AGENCY
Office of EnforcementREGION 3
841 Chestnut St.
Philadelphia, Pennsylvania 19107

CHAIN OF CUSTODY RECORD						
PROJ. NO.	PROJECT NAME			REMARKS		
2461	05/96 - 1B					
SAMPLERS: (Signature)	<i>Colleen Dray</i>					
STA. NO.	DATE	TIME	COM	STATION LOCATION	NO. OR CON. CONTAINERS	REMARKS
RW-09 5/31/96 1020	X			3-40 ml	X	Preserved w/ HCl, T3-23201-202, 205
RW-09 5/31/96 1022	X			2-lb	X	T3-23203-204
RW-09 5/31/96 1025	X			1-1L	X	Preserved w/ HCl, pH 2, T3-23206
RW-09 5/31/96 1025	X			1-1L	X	Preserved w/ HCl, pH 2, T3-23207
RW-13 5/31/96 1100	X			3-40ml	X	Preserved w/ HCl, T3-23216
RW-13 5/31/96 1102	X			2-1L	X	Preserved w/ HCl, T3-23216
RW-13 5/31/96 1105	X			1-day	X	Preserved w/ HCl, pH 2, T3-23212
RW-20 5/31/96 1100	X			1-day	X	Preserved w/ NaOH, pH 12, T3-23213
RW-20 5/31/96 1102	X			3-40ml	X	Preserved w/ HCl, T3-23214-25, 27
RW-20 5/31/96 1105	X			2-1L	X	Preserved w/ HCl, T3-23219, 221
RW-20 5/31/96 1105	X			1-1L	X	Preserved w/ NaOH, pH 2, T3-23220
RW-11 5/31/96 1155	X			1-1L	X	Preserved w/ NaOH, pH 2, T3-23222-224
RW-11 5/31/96 1157	X			2-lbs	X	Preserved w/ HCl, T3-23225-226
RW-11 5/31/96 1200	X			1-1L	X	Preserved w/ HCl, pH 2, T3-23227
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)	REMARKS
<i>Colleen Dray</i>	5/31/96 1140	FAX EX				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)	REMARKS
Received for Laboratory by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)	REMARKS
B - Momma	6/1/96	1030				

Distribution: Original Accompany Element; Copy to Coordinator Field File

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 3

841 Chestnut St.
Philadelphia, Pennsylvania 19107

PROJ. NO.	PROJECT NAME	CHAIN OF CUSTODY RECORD															
		STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OR COM.	TAMERS	REMARKS							
246	05/96 - 1B <i>(Aller Doffy / Mr. Wenz)</i>	RW11	5/3/96	1200	X			1-lb	X		Tag #5						
		FB	5/3/96	1145	X			3-lb	X		Preserved w/100% pH >12, T3-23228						
		FB	5/3/96	1147	X			1-lb	X		Preserved w/HCl, T3-23229-23						
		FB	5/3/96	1150	X			1-lb	X		T3-23232-233						
		FB	5/3/96	1150	X			1-lb	X		Preserved w/HCl, pH <2, T3-23234						
		TB	5/3/96	1215	X			1-lb	X		Preserved w/HCl, pH >12, T3-23235						
		RW57	5/3/96	1240	X			3-4oz	X		Preserved w/HCl, T3-23236-24						
		RW57	5/3/96	1242	X			3-4oz	X		Preserved w/HCl, T3-23239-241						
		RW57	5/3/96	1245	X			2-lb	X		T3-23245-2-242						
		RW28	5/3/96	1410	X			1-lb	X		Preserved w/HCl, pH <2, T3-23244						
		RW28	5/3/96	1412	X			3-lb	X		Preserved w/HCl, pH >12, T3-23245						
		RW28	5/3/96	1415	X			2-lb	X		Preserved w/HCl, T3-23246, 240-241						
		RW28	5/3/96	1415	X			1-lb	X		T3-23247-250						
		RW40	5/3/96	1450	X			1-lb	X		Preserved w/HCl, pH <2, T3-23251						
		RW40	5/3/96	1450	X			3-4oz	X		Preserved w/HCl, pH >12, T3-23252						
		Relinquished by: (Signature)															
		<i>Aller Doffy</i>															
		Date / Time	Received by: (Signature)		Date / Time	Relinquished by: (Signature)		Date / Time	Received by: (Signature)								
		5/3/96	1240		5/3/96	1240		5/3/96	1240								
		Relinquished by: (Signature)															
		<i>Aller Doffy</i>															
		Date / Time	Received by: (Signature)		Date / Time	Relinquished by: (Signature)		Date / Time	Received by: (Signature)								
			<i>B-Morrell</i>		6/1/96	1030											

ENVIRONMENTAL PROTECTION AGENCY
 Office of Enforcement
CHAIN OF CUSTODY RECORD
 REGION 3
 841 Chestnut St.
 Philadelphia, Pennsylvania 19107

PROJ. NO.	PROJECT NAME	STA. NO.	DATE	TIME	CON.	NO. OF TRAINERS	REMARKS
2461	05/96-18	RW40	5/29/96	1452	X	2-Phase	X
		RW40	5/30/96	1455	X	1-Hour	X
		RW29	5/31/96	1550	X	3-hour	X
		RW29	5/31/96	1552	X	2-hour	X
		RW29	5/31/96	1555	X	1-hour	X
		RW29	5/31/96	1625	X	3-hour	X
		RW66	5/31/96	1627	X	2-phase	X
		RW66	5/31/96	1630	X	1-hour	X
		RW66	5/31/96	1630	X	1-hour	X
		RW27	5/31/96	1705	X	3-hour	X
		RW27	5/31/96	1707	X	2-hour	X
		RW27	5/31/96	1710	X	1-hour	X
		RW27	5/31/96	1710	X	1-hour	X
Relinquished by: (Signature)		Date / Time	Received by: (Signature)	Relinquished by: (Signature)			
Peter Doffey		5/31/96 1440	FED EX	Relinquished by: (Signature)			
Relinquished by: (Signature)		Date / Time	Received by: (Signature)	Relinquished by: (Signature)			
Brommont				Relinquished by: (Signature)			
Relinquished by: (Signature)		Date / Time	Received for Laboratory by: (Signature)	Date / Time	Received by: (Signature)	Remarks	
			Brommont	6/1/96 1034			

ENVIRONMENTAL PROTECTION AGENCIES

Office of Enforcement

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CHAIN OF CUSTODY RECEIVED

REGION 3
841 Chestnut St.
Philadelphia, Pennsylvania 19107

AR320241